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ABSTRACT

Readability formulas were applied to the drivers' manuals of each of the 50 United States and Puerto Rico to determine whether the manuals were appropriate materials for motivating reluctant or low achieving adolescent readers. Four 100-word samples were chosen from each manual, according to four themes common to each manual and of particular importance to young adults: (1) driving under the influence of alcohol, (2) motorcycle safety, (3) the use of seatbelts, and (4) obtaining a learner's permit. Readability was calculated using the Fry, Flesch, and Raygor formulas. The readability analyses indicated that the manuals varied widely in reading level difficulty, with at least nine grade levels separating the easiest from the most difficult to read. In more than 60% of the states, students would need to read at or above the tenth grade level. Beyond the scope of the readability formulas, there were other key differences from state to state that appeared to influence the difficulty of the manuals, including organization, tables of content and indexes, and use of headings and highlighting techniques. (Readability levels for each of the 51 manuals are included.) (HTH)

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Are Drivers' Manuals Right for Reluctant Readers?

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Readability analyses of drivers' manuals issued throughout the nation's 50 states suggest that these materials may not be written at appropriate levels for many adolescent readers. An abridged version of this paper is to appear in the "Open to Suggestion" column of the Journal of Reading (volume 28).

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Motivating low-achieving adolescent readers requires considerable skill and creativity. Since these students have suffered through years of failure, teachers must provide them with reading materials that are especially exciting and rewarding. One type of reading material adolescents find tremendously stimulating pertains to driver education content (Roe, Stoodt, and Burns, 1978).

Many secondary reading teachers use drivers' manuals to capitalize upon teenagers' strong desire to obtain an operator's license. Teachers know that obtaining the license represents a rite of passage to most adolescents. To achieve the status and sense of freedom which accompany obtaining the license, students must first read and then successfully demonstrate understanding of the concepts presented in the drivers' manuals. Consequently, even the most disenchanted readers will attempt to study the manual at length. These repeated, voluntary interactions with the text are thought to generate improvement in poor readers' technical vocabulary and sight word knowledge, reading fluency, basic comprehension skills, study habits and visual literacy (e.g., pictures,symbols, diagrams, charts, etc.).

High Interest/Low Readability?

Reluctant readers need materials which are not only highly

motivational, but also easily understood. While drivers' manuals are certainly interesting to adolescents, their instructional value would be severely limited if their readability levels were too far advanced. Low-achieving readers desperately need to experience success. They will avoid reading materials which cause frustration, even materials as intrinsically appealing and gratifying as drivers' manuals.

The purpose of this study was to determine the difficulty levels of each drivers' manual used in the United States. Sample manuals were secured from all 50 states and Puerto Rico during the latter half of the 1983 calendar year. Readability analyses were begun after all of the manuals had been received.

To increase the accuracy and reliability of the results, three standard readability formulas were used: the Raygor (1977), the Fry (1977), and the Flesch (1951) estimates. Four 100-word samples were taken from each of the drivers' manuals. The samples were chosen according to four themes common to all of the manuals. The four themes were (1) driving under the influence of alcohol, (2) motorcycle safety, (3) the use of seat-belts, and (4) obtaining a learner's permit. By selecting the samples according to common themes instead of at random, more direct comparisons between the manuals could be made. The themes, in addition, were thought to be ones of particular interest and importance to young adults.

Results

The readability analyses indicated that the drivers' manuals varied widely in difficulty. Using the Raygor and Flesch estimates, the readability ranged from sixth grade to the college graduate (17+) level. The Fry formula yielded a similar range extending from sixth through the fifteenth grade levels. Taken together, these results reveal that at least nine grade levels separated the easiest from the most difficult manuals. The large range is somewhat surprising since the samples conveyed essentially the same information.

Insert Table 1 about here

On the average, the drivers' manuals were found to be fairly difficult to read. According to the Raygor formula, the mean of the passages measured 10.5. Once more, the other formulas produced similar results. The Fry formula generated a mean difficulty score of 10.2, while the Flesch formula indicated a range of 10th through 12th grades. An examination of Table 1 suggests that the three formulas were in close agreement on nearly all of the manuals. Since correlations between the three readability estimates all exceeded .90 ($p < .0001$), it was clear that the formulas were measuring basically the same properties of the texts.

Discussion

Because of their complexity, several of the drivers' manuals are probably not appropriate for instructional use with low-achieving readers. In more than 60% of the states students would need to read at or above the 10th grade level to contend with the difficulty of the manuals. Many reluctant readers simply do not have the ability to comprehend 10th grade materials.

For seriously disabled adolescent readers, the prospects for instructional use are even less encouraging. Only four of the manuals (Connecticut, Georgia, Louisiana, and New Jersey) are written at 7th grade level or below and only eighteen more make moderate demands on reading ability. The manuals seem better suited to average and above average readers than to the poor readers with whom they are currently most often used.

Of course, all of these conclusions are only as valid as the readability formulas themselves. The formulas do not tap many of the variables which contribute to text difficulty. For drivers' manuals, much of the information is transmitted or clarified through visual aids such as charts, pictures, tables, and graphs. In surveying the manuals, we noted great variability in the quality of these aids. Some aids appear to facilitate understanding, while others only add to the confusion. Since readability formulas have no provisions for measuring the usefulness of visual aids, a manual's actual difficulty may be different from what the text-only analyses indicate.

Beyond the scope of the readability formulas, there were other key differences from state to state that appeared to influence the difficulty of the drivers' manuals. The more prevalent factors included (1) organization of the overall text; (2) utility of the table of contents and index; (3) inclusion of either headings and subheadings; (4) use of highlighting techniques; (5) variability of size, style, leading and legibility of the print; (6) dissimilarity of page formatting; and (7) provision of study aids like glossaries and practice tests. Again, the manuals varied widely on these factors.

With these qualifications in mind, the results of the study are useful in three ways. First, the study cautions against using drivers' manuals with disabled readers as a matter of common practice. Despite their enormous appeal, the manuals may be too difficult for many students. What begins as a conscientious attempt to motivate students through desirable reading material may result in even greater frustration.

Second, even though the overall readability of the manuals may be too difficult for poor readers to comprehend independently, the manuals may still be used instructionally. For example, listening exercises can be substituted for guided reading. Teachers can also skim the manuals to identify easier passages that are well-suited to developing reading skills students lack. Complicated passages of high interest levels or

important content can be rewritten in a simplified style. Then exercises or even practice test items from the manuals can serve as a solid foundation for improving comprehension skills which cannot be practiced independently because of students' limited sight vocabularies and word attack strategies.

Lessons focusing on vocabulary knowledge, literal and inferential comprehension, fluency, and study techniques can provide needed practice in skills that generalize easily to other reading contexts. For instance, interpreting adjunct visual aids is a skill often required in content areas like social studies and science. The manuals are a particularly rich source for charts, diagrams, tables, and graphs.

The key to using drivers' manuals to foster reading skills is understanding their limitations as instructional resources and then reviewing carefully their content before developing and presenting instructional lessons and activities to poor readers. Several educational agencies and organizations have issued instructional guides or learning modules (Alabama State Department of Education, 1976; Bohac, 1976; Mick, 1980) that will prove useful to the reading specialist wishing to approach the development of reading skills through driver safety content.

Finally, the study demonstrates the need for greater communication between state departments of highway safety. Some drivers' manuals are clearly superior to others and could serve

as models for less effective ones. After all, the manuals fulfill a very important purpose: familiarizing residents with the rules of the road. Since studying the manuals prior to the drivers' test is the only in-depth exposure most individuals ever have to traffic safety, the concepts must be presented in a clear and vivid way. A failure to communicate at this basic level threatens everyone's safety. Perhaps efforts to reduce the difficulty in drivers' manuals could ultimately result in safer highway practices.

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Table 1

Readability Grade Level

State	Raygor	Fry	Flesch	Average Difficulty
Alabama	12	12	10-12	Fairly Difficult
Alaska	College	13	10-12	Difficult
Arizona	9	9	8-9	Moderate
Arkansas	11	11	10-12	Fairly Difficult
California	9	9	8-9	Moderate
Colorado	11	11	10-12	Fairly Difficult
Connecticut	6	6	6	Easy
Delaware	College	10	10-12	Fairly Difficult
Florida	11	10	8-9	Moderate
Georgia	7	7	7	Fairly Easy
Hawaii	11	12	13-16	Difficult
Idaho	12	11	10-12	Fairly Difficult
Illinois	10	9	8-9	Moderate
Indiana	11	10	10-12	Fairly Difficult
Iowa	10	10	10-12	Fairly Difficult
Kansas	8	8	8-9	Moderate
Kentucky	11	11	10-12	Fairly Difficult
Louisiana	7	7	7	Fairly Easy
Maine	10	10	8-9	Moderate
Maryland	11	12	13-16	Difficult

Massachusetts	College	12	13-16	Difficult
Michigan	7	8	8-9	Moderate
Minnesota	12	11	10-12	Fairly Difficult
Mississippi	12	12	13-16	Difficult
Missouri	11	12	13-16	Difficult
Montana	11	11	10-12	Fairly Difficult
Nebraska	Professional	15	17+	Very Difficult
Nevada	10	11	10-12	Fairly Difficult
New Hampshire	8	9	10-12	Moderate
New Jersey	8	7	7	Fairly Easy
New Mexico	11	10	10-12	Fairly Difficult
New York	12	12	13-16	Difficult
North Carolina	8	9	8-9	Moderate
North Dakota	11	10	8-9	Moderate
Ohio	12	14	13-16	Very Difficult
Oklahoma	College	13	13-16	Very Difficult
Oregon	10	9	8-9	Moderate
Pennsylvania	9	10	8-9	Moderate
Rhode Island	10	10	10-12	Moderate
South Carolina	8	9	7	Moderate
South Dakota	11	10	10-12	Fairly Difficult
Tennessee	12	11	10-12	Fairly Difficult
Texas	11	11	8-9	Moderate
Utah	8	9	8-9	Moderate

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Vermont	College	13	13-16	Difficult
Virginia	8	8	8-9	Moderate
Washington	College	13	13-16	Difficult
West Virginia	10	10	10-12	Fairly Difficult
Wisconsin	12	11	10-12	Fairly Difficult
Wyoming	10	10	10-12	Fairly Difficult
Puerto Rico	10	9	8-9	Moderate
Mean	10.5	10.2	10-12	Fairly Difficult

For a content analysis of drivers' manuals which discusses a range of readability and production factors influencing both comprehension and mastery of the material in such pamphlets, the reader is referred to the following article:

Henk, William A., Stahl, Norman A., & King, James B. "The Readability of State Drivers' Manuals," Transportation Quarterly, October, 1984.